

## EXPLOSIVES SAFETY TRAINING DISTRIBUTIVE EDUCATION COMPUTER BASED TRAINING

Upton R. Shimp  
U.S. Army Defense Ammunition Center and School (USADACS)  
Savanna, Illinois 61074-9639  
DSN Phone 585-8845, Commercial Phone (815) 273-8845  
DSN FAX 585-8878, Commercial FAX (815) 273-8878  
email [sioacasc@savanna-emh1.army.mil](mailto:sioacasc@savanna-emh1.army.mil)

### ABSTRACT

The Ammunition School at USADACS provides explosives safety training to all four military services under the guidelines established for the Single Manager for Conventional Ammunition. Traditionally students travel to the school location to attend class or the instructors travel to the student's location to present the training. The costs for both methods have increased resulting in limitations on the number of students that receive training. However, the number of people requiring explosives safety training has increased. USADACS has initiated the use of modern training methods to overcome this dilemma. One of these methods is a form of distributive education known as computer based training (CBT). Explosives safety courses are being developed by USADACS using CBT software that allows a complete course to be distributed to a student in a diskette or CD-ROM mode. Students complete the course at their home station at their own pace. The first course in circulation, The Basics of Naval Explosives Hazard Control has been distributed to over 250 Navy/Marine Corps locations. Training requirements are met and the installation has avoided the cost of sending students to a formal school or paying costs to bring instructors on-site. Additional courses have been developed or are under development for Air Force Weapons Safety, Handling of Hazardous Materials, Army Explosives Safety, and Naval Explosives Safety for Supervisors and Managers. The CBT environment offers benefits previously unattainable. Travel time, travel cost, and per diem are saved. Students are not restricted to formal school schedules, having the flexibility to complete CBT courses at their own individual learning rate. Job disruptions are virtually eliminated.

This presentation will demonstrate explosives safety CBT. The demonstration will include quantity distance, site planning, Air Force flight line operations, hazard classification, and risk management. Notebook computers will be available for seminar attendees to browse through explosives safety CBT courses. Length of time required for presentation is 30 minutes.

<b>Report Documentation Page</b>			<i>Form Approved OMB No. 0704-0188</i>					
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1. REPORT DATE <b>AUG 1996</b>	2. REPORT TYPE	3. DATES COVERED <b>00-00-1996 to 00-00-1996</b>						
4. TITLE AND SUBTITLE <b>Explosives Safety Training Distributive Education Computer Based Training</b>			5a. CONTRACT NUMBER					
			5b. GRANT NUMBER					
			5c. PROGRAM ELEMENT NUMBER					
6. AUTHOR(S)			5d. PROJECT NUMBER					
			5e. TASK NUMBER					
			5f. WORK UNIT NUMBER					
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) <b>U.S. Army Defense Ammunition Center and School (USADACS),Savanna,IL,61074-9639</b>			8. PERFORMING ORGANIZATION REPORT NUMBER					
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSOR/MONITOR'S ACRONYM(S)					
			11. SPONSOR/MONITOR'S REPORT NUMBER(S)					
12. DISTRIBUTION/AVAILABILITY STATEMENT <b>Approved for public release; distribution unlimited</b>								
13. SUPPLEMENTARY NOTES <b>See also ADM000767. Proceedings of the Twenty-Seventh DoD Explosives Safety Seminar Held in Las Vegas, NV on 22-26 August 1996.</b>								
14. ABSTRACT <b>see report</b>								
15. SUBJECT TERMS								
16. SECURITY CLASSIFICATION OF: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding: 2px;">a. REPORT <b>unclassified</b></td> <td style="padding: 2px;">b. ABSTRACT <b>unclassified</b></td> <td style="padding: 2px;">c. THIS PAGE <b>unclassified</b></td> </tr> </table>			a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>	17. LIMITATION OF ABSTRACT <b>Same as Report (SAR)</b>	18. NUMBER OF PAGES <b>9</b>	19a. NAME OF RESPONSIBLE PERSON
a. REPORT <b>unclassified</b>	b. ABSTRACT <b>unclassified</b>	c. THIS PAGE <b>unclassified</b>						

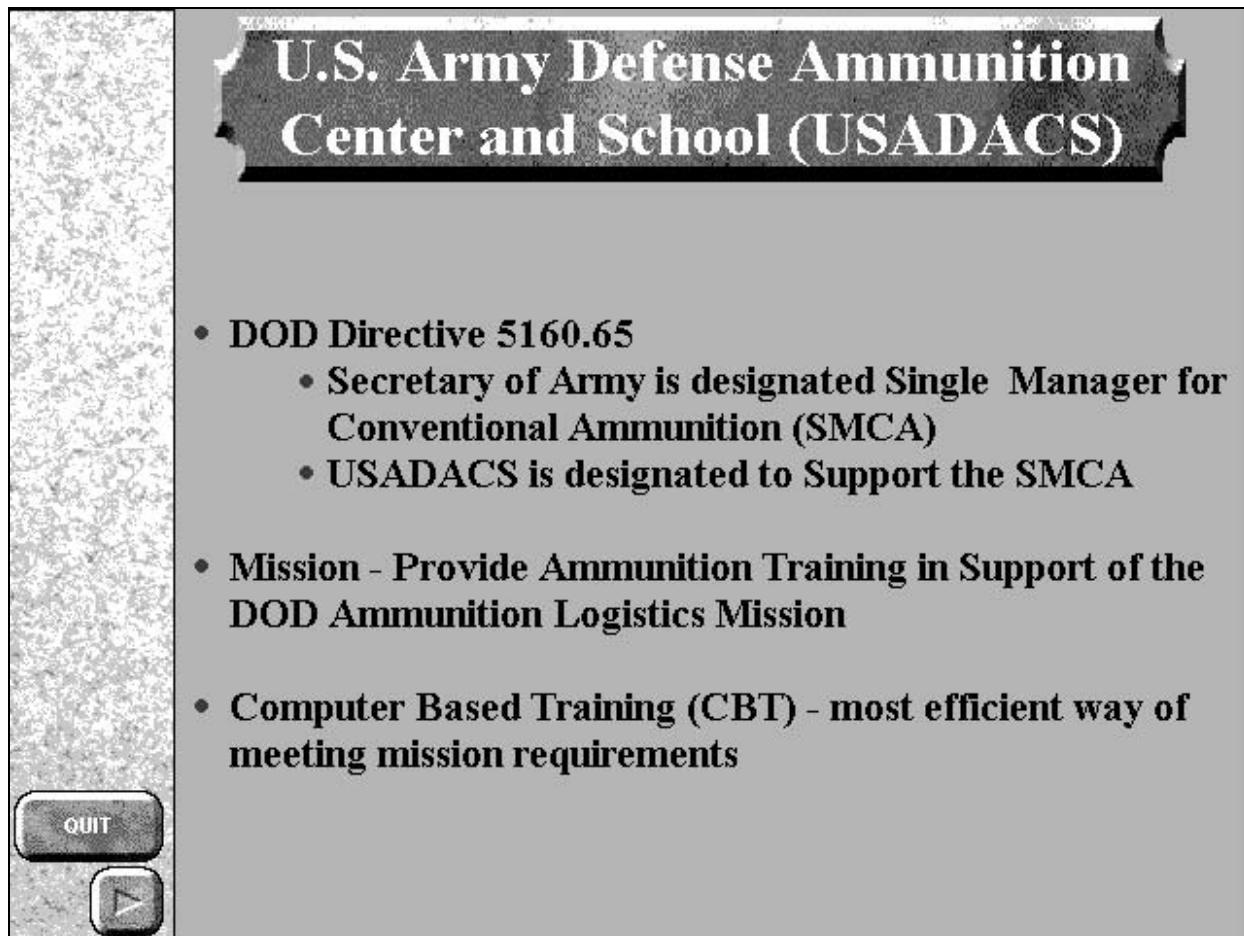


Figure 1

**Figure 1** – While “Army” is an integral part of the title of USADACS, do not get the misconception that USADACS provides training to only Army personnel in Army disciplines. DoD Directive 5160.65 designates the Secretary of Army as the Single Manager for Conventional Ammunition (SMCA). This means that the Army is the single manager for these commodities for all the Services. This same directive designates USADACS to provide training to all the Services in support of both the SMCA and the DoD ammunition logistics missions. The increased demand for multi-service training, given the limited resources available in the persons of instructors, has dictated that USADACS pursue innovative avenues to supply the training demand: Computer Based Training (CBT) has been the avenue of choice.

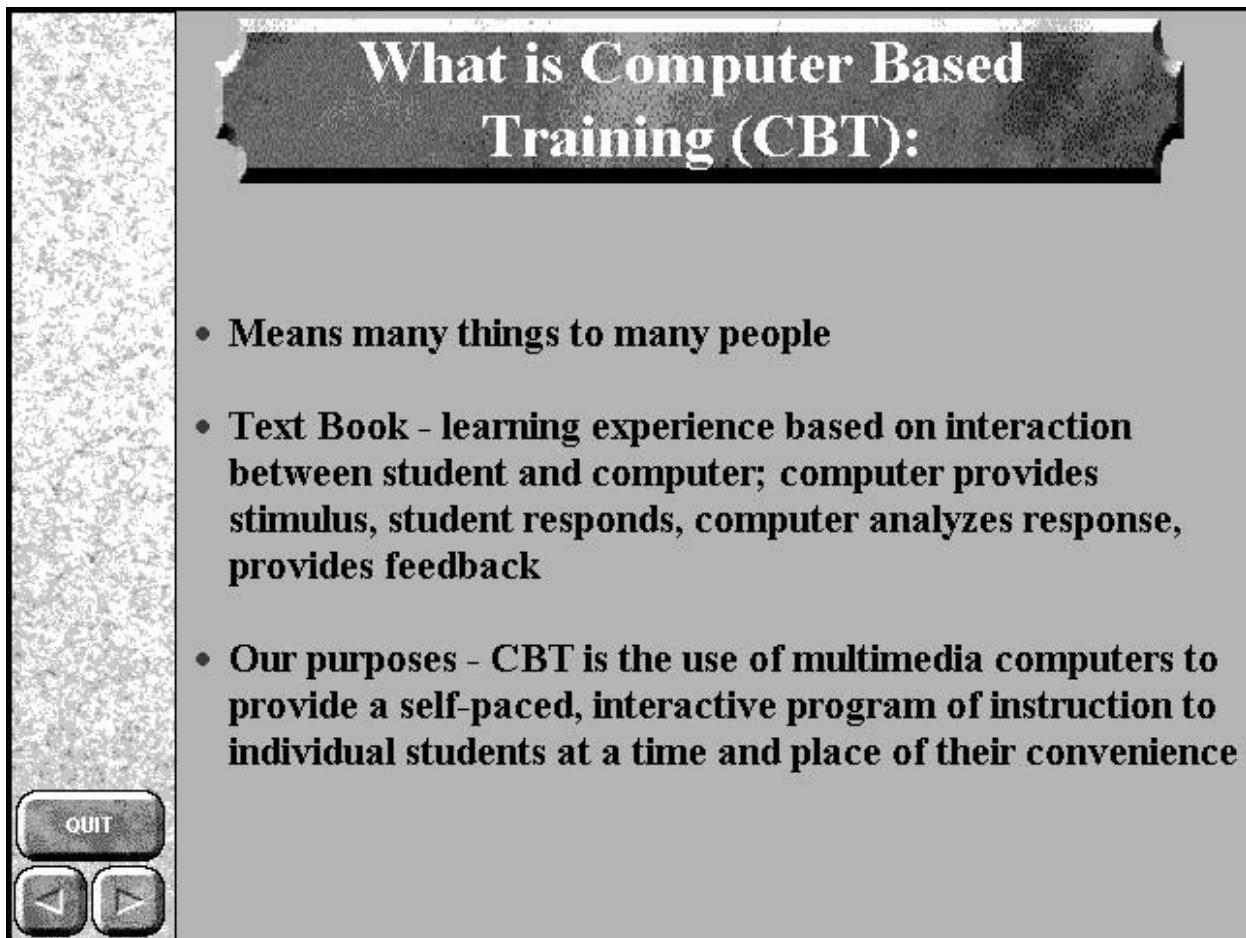


Figure 2

**Figure 2 – What is CBT?**

Well, it means many things to many people, but a more common picture it brings to mind is that of the “resource center scenario” whereas there is a large room with numerous computer stations. There is a large master screen up front where a facilitator displays the instructional program and gives program operational and navigational instructions, while students assigned to individual stations try to follow along. There may even be a couple of assistant facilitators strolling the room to assure everyone is understanding instructions and “keeping up” with the program as being presented. While the “text book” definition displayed on this screen supports such a scenario, we have chosen to define CBT more in terms of the utility we envision our customer, the Services, will have for our product. Thus, we have included terms such as “self paced,” and “time and place of their convenience” to emphasize that our CBT product is developed with the philosophy that the entire program will not, in all probability, be gone through in one sitting and will be utilized at various locations, to include the work site itself. Please note that nothing precludes the product from being used in the “resource center” mode, but that it was developed with the individual, lone user being emphasized.

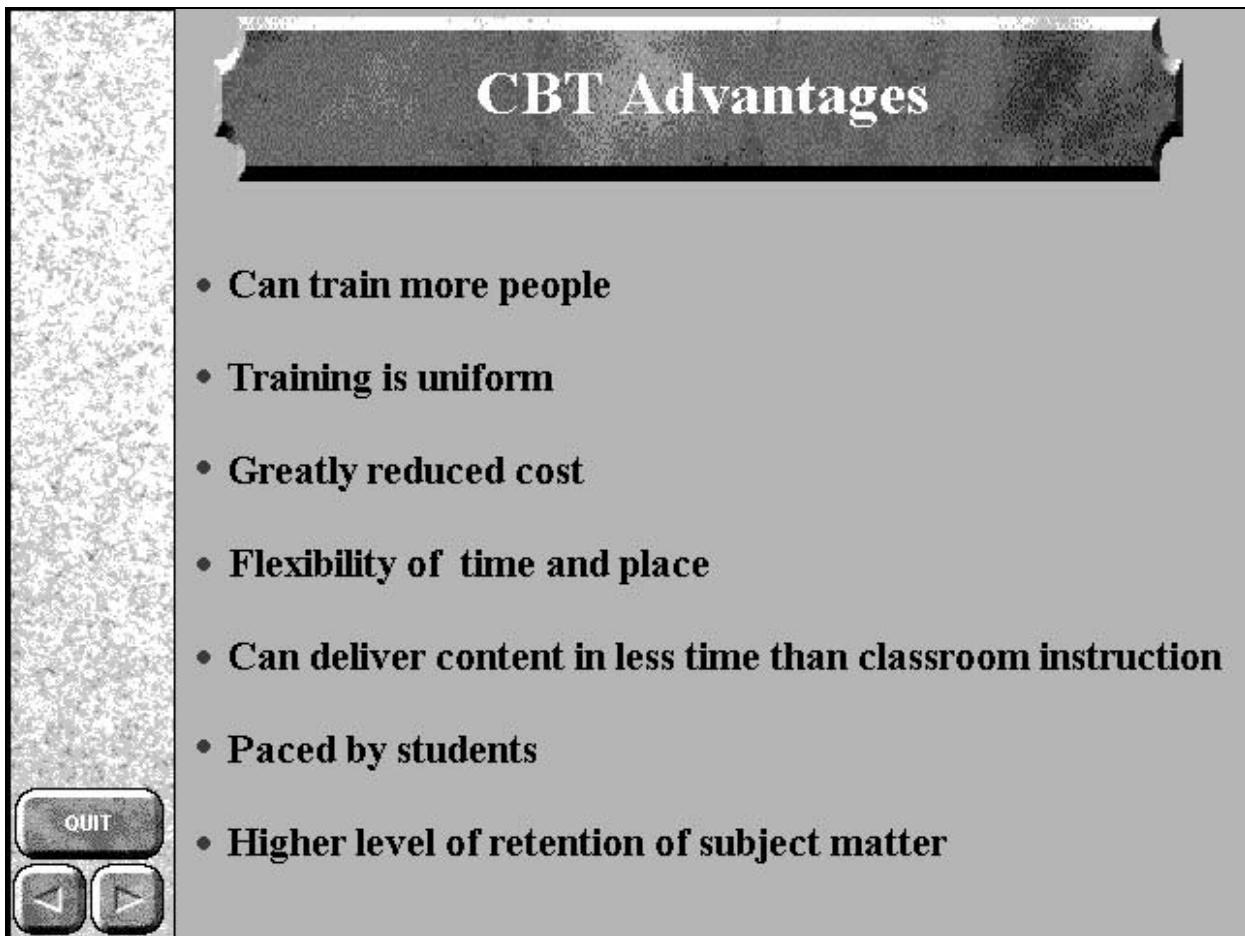


Figure 3

**Figure 3** – The advantages of CBT:

- Can train more people– USADACS's experience with developing a course for the Navy via CBT has dramatically illustrated this fact. The chart to be presented in screen 006 will demonstrate this. To date, USADACS has distributed in excess of 300 copies of the Navy product. Given our vision of a single individual using a single product, this means that at any given time it is possible to be providing training to more than 300 persons simultaneously. Compared to classroom training, and given that the maximum class size is approximately 30 students, one can see that it would take a “minimum” of 10 instructors to supply said training. We emphasize minimum because in classes of the above size, we almost always assign two instructors per class for practical purposes; so to resource the stated classroom presentations would, in fact, require approximately 20 instructors rather than 10. USADACS is not resourced to support such a classroom effort.
- Training is uniform– No longer faced with the situation of various instructors teaching different material; or, when teaching the same material, of emphasis being placed on different points.

- Greatly reduced cost— Taking the Navy example mentioned earlier, one can readily see the tremendous cost that would be involved in funding the temporary duty travel (TDY) for 300 plus persons to come to USADACS to take a week long course: There would be round trip air fares, hotel accommodations, rental car expense, and food allowances. Conversely, if we opted to do all the courses on-site, there would still be the very substantial cost associated with covering these same type expenses for 60 plus instructors; only now we would have to add the additional and substantial cost of shipping training materials. With CBT the only cost associated with actually presenting the course is the cost of mailing either a few discs to the customer.
- Flexibility of time and place— One of real beauties of CBT is that the material can be taken any time (duty, non-duty, breaks, training holidays, night, etc.) and any place (training center, office, work site, home, vacation site) that is convenient for the individual/organization. The only requirement is that there be a multi-media computer available.
- Content delivered in less time— Surveys have shown that material can be presented via CBT in 30% to 40% of the time required for classroom presentation. USADACS's experience with the Navy CBT product has borne out this statistic, thus representing a substantial savings in terms of cost and time.
- Paced by student— Individual students can work at their own pace. There is no pressure to keep up with anyone. A whole range of possibilities exist not only in terms of how many hours a person will spend on the computer in completing the material, but also in the distribution of those hours, i.e. one person might sit down and go through the entire program in however many hours it takes them whereas others might choose to do one or two hours a day for one or two days a week. The possibilities are endless.
- Higher retention level— Again, studies have shown that there is a higher retention level of material presented via CBT versus classroom. This benefit can be attributed to inherent CBT qualities of interactivity between student and program, self paced learning, positive environmental concerns, and instant feedback and review capabilities.

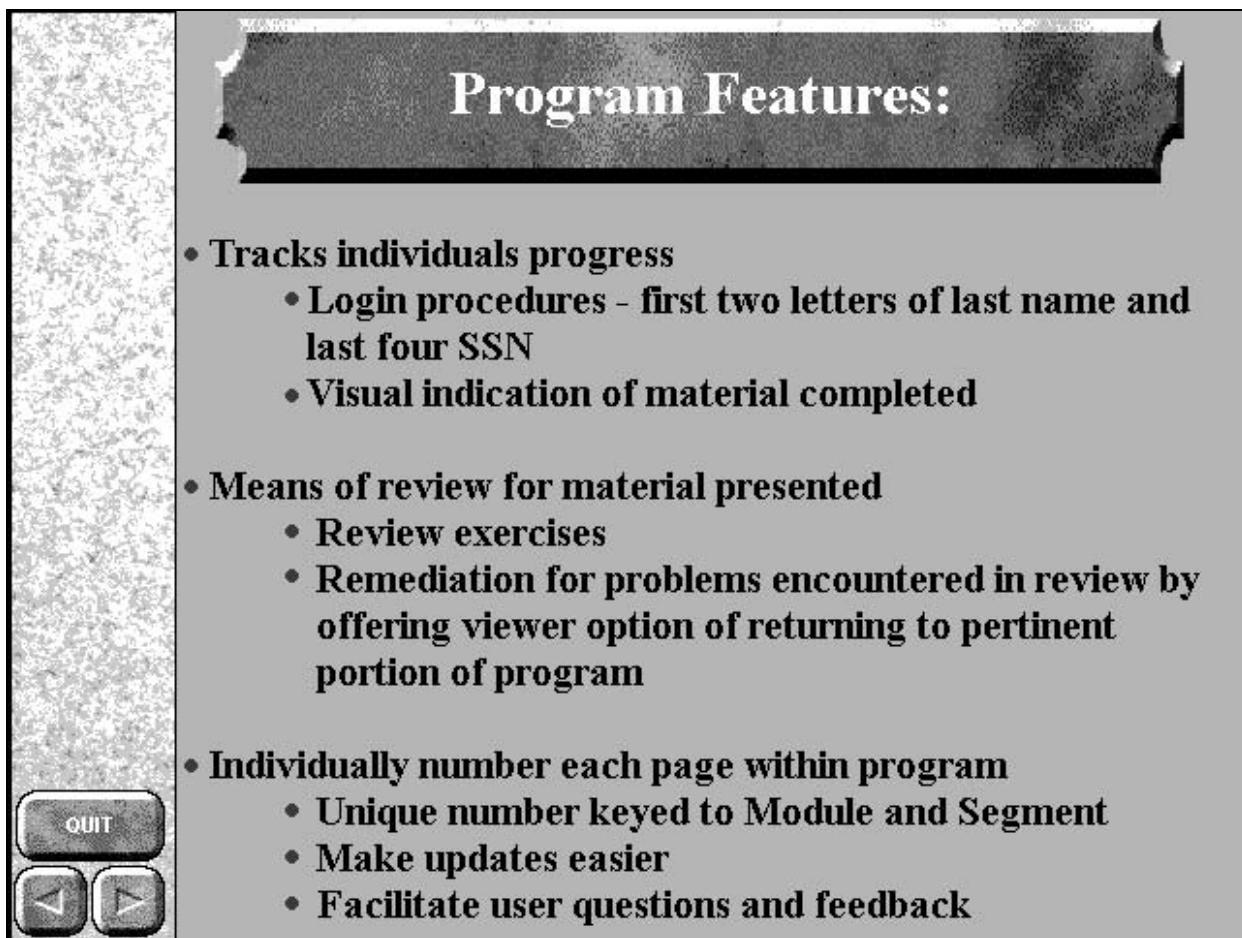


Figure 4

**Figure 4 – Program Features:**

- Tracks individual progress— this is done through the use of a log-in procedure that consists of the first two letters of the last name and last four numbers of the SSAN of each individual user. Once this information is initially logged in, the individual program keeps track of that individual's progress. Upon subsequent reentries into the program, the user will have the option of reviewing the opening portions of the program that explain the navigational aspects and of returning to the point (module) where program was last exited. This program will contain six modules or major topics. Some of the modules are further broken down into segments. The “menu” button will give one a listing of the six major topics or modules; the “segment menu” button will give one a listing of the sub-topics within a given module. Once a module has been completed, upon reentering the program, visual indications in the forms of a “check mark” and “DONE” will be superimposed over the title of module when the menu is viewed. If the module was started but not completed prior to exiting the program, these indications will not appear across the module title upon reentering. Therefore, a person will always have an indication of how much of the program they have completed regardless of how long it has been since the last session. Please note that when a module is labeled as “done,” one is not precluded from retaking that module.

- Means of review– Review exercises are interspersed throughout this product to reinforce material presented and hopefully learned. The review exercises place a premium on interactivity, i.e. the reviewer will many times have to “do something” to reflect a correct response. Also, once the reviewer encounters problems in giving the appropriate response, they will be offered the opportunity to return to the appropriate portion of the module that addresses the problem.
- Individually number each screen– This will be a unique four digit number keyed to the module, segment and screen being viewed. For instance, lets say we are in module one, segment two and screen six of that segment: This screen would be numbered “1206.” Numbering each screen will help tremendously in updating in that the content of an individual screen can be identified for change. Also, when users call back with questions or feedback, their remarks can be associated with a particular screen, making referencing, identification, and resolution of problems far less cumbersome.

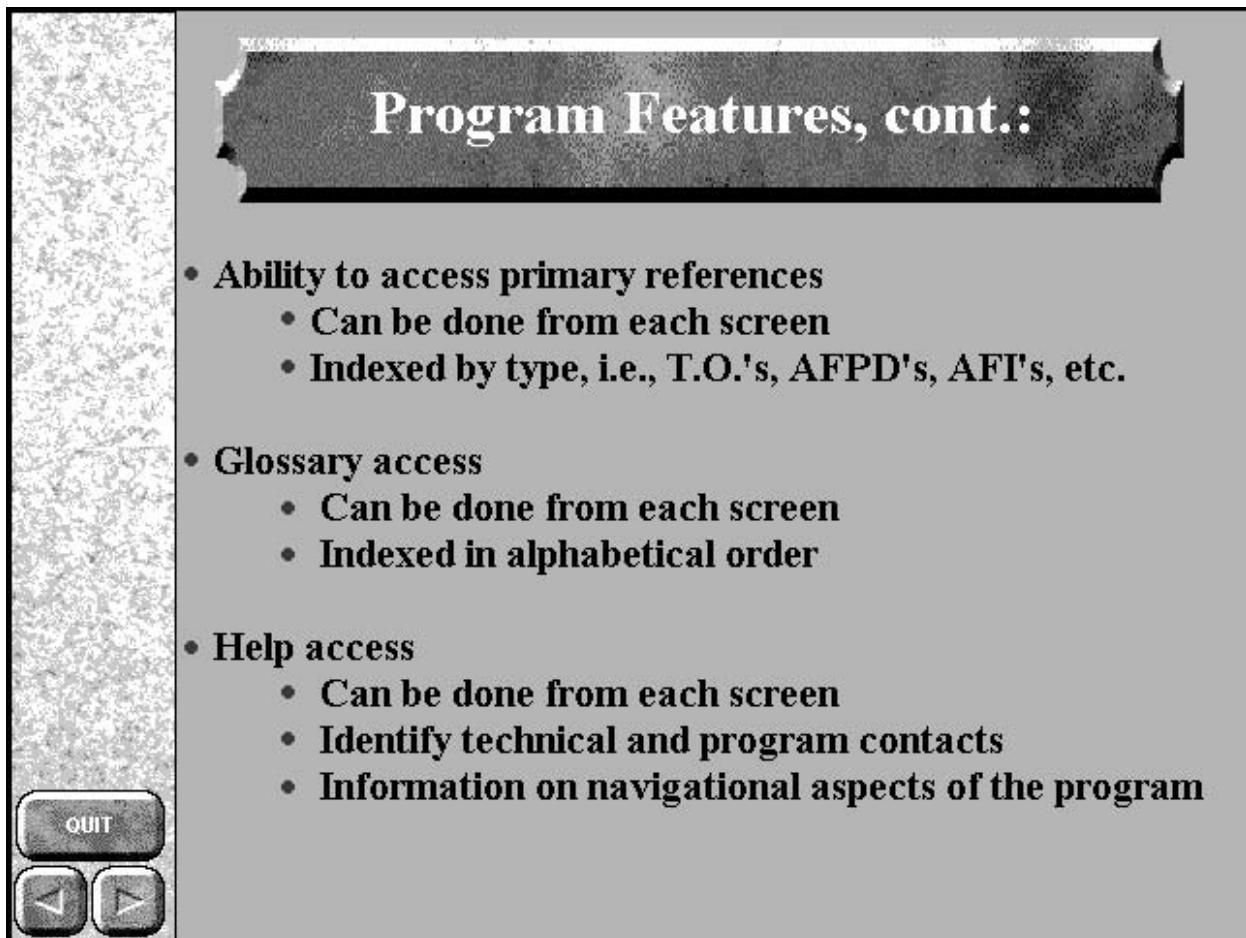


Figure 5

**Figure 5 – Program features, cont.:**

- Access primary references— A listing of the primary references used in the program will be available for access from each screen by clicking the “reference” button. Once clicked, a choice of references will be offered by type, i.e. T.O.’s, AFPD’s, AFI’s, etc. Once chosen, a listing of the particular type will be displayed in numerical order along with its title. The entire reference will be capable of being viewed in scrollable text if one so desires simply by clicking on its designator and title.
- Glossary access— Also available from each screen by clicking “glossary” button. A glossary of common terms used will be presented in alphabetical sequence with a short definition of each term.
- Help access— Available from each screen by clicking “help” button. Information on navigational aspects of the program will be available along with the names, organizations, telephone and fax numbers, and mailing and e-mail addresses of persons to contact to address either content or technical questions.

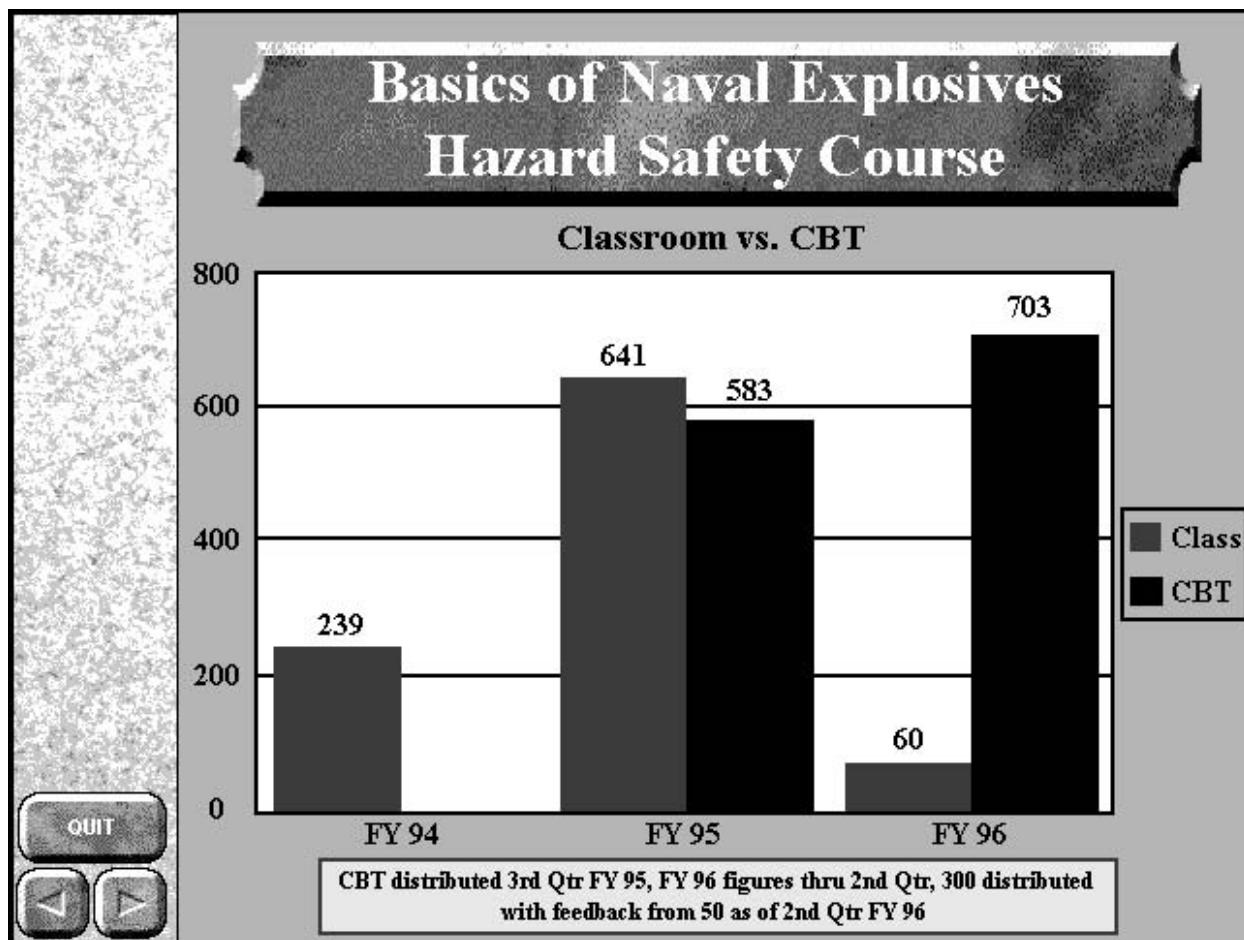


Figure 6

**Figure 6** – This graph illustrates USADACS's experience relative to numbers of students trained classroom versus CBT for the Navy course Basics of Naval Explosives Hazard Safety. In FY-94 USADACS trained 239 persons in the classroom. The CBT version of this course was developed in FY-95 with distribution being made in the 3rd quarter of that FY. As the chart indicates, for entire FY-95, 641 students were trained classroom and for just the last two quarters of FY-95, 583 were trained CBT. The reason for the dramatically increased demand from FY-94 to FY-95 is that this course became a “certification course” during the interval. Figures available for just the first two quarters of FY-96 show that we trained 60 students classroom whereas 703 have been trained CBT. It should also be noted here that the FY-96 figures represent feedback from 50 of the approximately 300 products distributed. It should be kept in mind that the training done to date in FY-96 via CBT has been accomplished without the expenditure of TDY funds. So, this graph validates some of the principal advantages of CBT; that far more persons can be trained far more effectively for far less cost.